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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/607,915

06/27/2003

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TJK/395

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27717 7590 01/14/2008
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EXAMINER

LIN, JAMES

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

01/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/607,915	Applicant(s) KOBAYASHI, YOSHIHIRO	
	Examiner Jimmy Lin	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12,17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12,17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/2007 has been entered.

Claim Objections

2. Claim 18 is objected to because of the following informalities: "farmed" has been amended from "formed" without proper indication. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 12 and 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims require "a film thickness of 100 A to 2,000 A" and "the depth . . . in a range of 500 A to 1 mm" (claim 12). However, "A" is not a proper unit of length. If Applicant intends to use angstrom as the particular unit of length, then the proper symbol would be "Å". For the purpose of this examination, the unit of length will be interpreted to be angstrom.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 12 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarnecki (U.S. Patent Application Publication No. 2003/0089252) in view of Towns et al. (U.S. Patent No. 6,153,711), Park et al. (U.S. Patent No. 5,053,298), and Roitman (U.S. Patent No. 5,972,419). Miyashita et al. (U.S. Publication No. 2001/0001050) is used as a teaching reference.

Sarnecki teaches forming an electroluminescent element by intaglio printing a light-emitting material [0008],[0010]. The film can be printed with a thickness in the range of 10 nm to 1 μ m (i.e., 100 Å to 10,000 Å, which fully encompasses the claimed range).

Sarnecki does not explicitly teach that the ink has a viscosity of 0.5-500 cP. However, Sarnecki does teach that the viscosity should be chosen to be a suitable viscosity for gravure printing and that such viscosities are taught by Towns [0020]. Towns teaches ink viscosities of 1-200 cP (col. 2, lines 56-67). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen a viscosity of 1-200 cP as the particular viscosity of Sarnecki with a reasonable expectation of success because Towns teaches that 1-200 cP are suitable printing ink viscosities and because Sarnecki teaches using the viscosities of Towns.

Sarnecki teaches that multiple colors are applied and that each color is dried (i.e., hardened) before the next color is applied [0022], but does not teach that a later color is printed after a protective layer is placed over the already printed colors. However, Park teaches that in printing different colored pixels, each pixel should be covered to protect it during the deposition of the subsequent pixel (col. 3, line 29-col. 4, line 28). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have covered each pixel with a protective film before printing the subsequent pixel because Park teaches that such is a suitable method for protecting each already-deposited pixel during the deposition of subsequent pixels.

Sarnecki does not explicitly teach that the depth of the groove or a cell of the intaglio is in a range of 500 Å to 1 mm, but does teach that the depth of the cells is a result-effective

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variable because it controls the thickness of the film formed [0011]. It has been held that the discovery of the optimum value of a result effective variable in a known process is ordinarily within the skill in the art. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the depth of the cells of Sarnecki through routine experimentation in order to have achieved the desired thicknesses in the range of 10 nm to 1 μ m.

Sarnecki does not explicitly teach a contact angle of the light-emitting layer forming coating solution with a base material, on which the light-emitting layer is formed, is 20° or less. Sarnecki does teach that the light-emitting material droplets are printed into desired into patterns. These patterns comprise of areas where light-emitting material is to be deposited and areas where light-emitting material is *not* deposited ([0040]; Fig. 1A). Accordingly, Roitman teaches that it was well known in the art to form hydrophilic and hydrophobic regions in order to confine light-emitting material droplets to form a desired pattern (col. 4, lines 56-59). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed hydrophilic and hydrophobic regions on the substrate of Sarnecki with a reasonable expectation of success. One would have been motivated to do so in order to have further confined the droplets to a desired pattern. The light-emitting material droplets would easily wet the regions in which they are to be deposited, and would repel regions in which they are not to be deposited. The high wettability of the droplets to the deposited regions would necessarily create a low contact angle of the droplet relative to the base material because the degree of wettability is inversely proportional to the contact angle (see, e.g., Miyashita, [0095]). One of ordinary skill in the art would have recognized that any degree of wettability and/or contact angle would be operable so long as the deposited regions have greater attraction to the light-emitting material droplet than the regions not to be deposited onto. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to have used any degree of contact angle, including that of the claimed range, of the droplet with respect to the base material with a reasonable expectation of success.

Claim 17: The intaglio is formed into plural cells to print pixels [0009], [0011].

Claim 18: Separate stations may be used for each color [0022]. Thus, the area of the group of cells that provide ink from one printing plate is smaller than the total area of the light-

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emitting layer on the formed device because the total area of the emitting pixels comprises all three colors.

Response to Arguments

7. Applicant's arguments filed 10/23/2006 have been fully considered but they are not persuasive.

Claims 12 and 16-18 as rejected over Sarnecki '252, Towns '711, and Park '298.

Applicant argues pg. 4-5 that the claimed range of viscosity and of the groove depth have a particular relationship. However, the Towns reference, which is incorporated by reference in the Sarnecki reference, teaches an overlapping viscosity range. Sarnecki teaches that a desired thickness of the deposited film and that the thicknesses can be controlled by adjusting the groove depth. One of ordinary skill in the art would have optimized the viscosity within the range as taught in Towns and the groove depth through routine experimentation in order to have optimized the printing process and to have formed the desired film thickness.

Applicant argues on pg. 7 that although Towns exemplifies "reverse roll coating, meniscus coating, and coating/transfer coating methods" for the conventional printing methods in col. 1, lines 32-34, Towns does not include "reverse roll coating, meniscus coating, and coating/transfer coating methods" as examples for printing methods used for inks having viscosity range of 1 cP to 200 cP. However, Towns explicitly teaches that the light-emitting material "is deposited by the *desired coating technique* (e.g., spin coating, blade coating or ink-jet printing)" (emphasis added by Examiner) (col. 7, lines 7-11). Towns does not limit the "desired coating technique" to only spin coating, blade coating, and ink-jet printing because such methods are merely examples of a desired coating technique. Because reverse roll coating, meniscus coating, and coating/transfer coating methods are earlier exemplified as operable coating techniques that are suitable equivalents of spin coating, blade coating, and ink-jet printing, Towns reasonably teaches that reverse roll coating, meniscus coating, or coating/transfer coating method could be a "desired coating technique" and that the viscosity range of 1 cP to 200 cP would be operable in such coating methods.

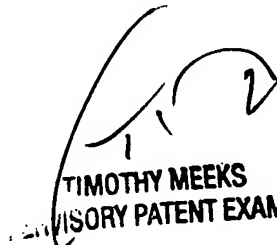
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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TIMOTHY MEES
SORY PATENT EXAMINER